

AMENDMENTS TO THE CLAIMS

1. (currently amended) An image retrieval information storing apparatus for storing frame feature values in association with a plurality of frames of image data, comprising:

a calculating unit for calculating statistics of motion vector information related to said image data;

a frame feature value generating unit for generating a frame feature value which is numerical information representing quantity of a feature contained in a frame of said image data using the calculated statistics;

~~wherein said frame feature value is calculated by using statistics directly associated with motion vector information related to the image data, and the frame feature value is not an original form in said image data; and~~

a frame feature value storing unit for storing said frame feature value in correlating form with the frame of said image data, the frame feature value storing unit being connected to said frame feature value generating unit.

Claims 2-4 (canceled).

5. (withdrawn) An image retrieval information storing apparatus, comprising:

a coding information reading unit (101) reading prescribed

coding information which will be information representing frame feature from coded image data; and

a coding information storing unit (801) connected to said coding information reading unit (101) and storing said coding information in correspondence with each frame of said image data.

6. (withdrawn) The image retrieval information storing apparatus according to claim 5, further comprising:

a frame feature value generating unit (102) connected to said coding information reading unit (101), and generating a frame feature value which is a numerical representation of frame feature based on said coding information;

an index information generating unit (401) connected to said frame feature value generating unit (102), determining a featured frame among said image data based on said frame feature value, and generating index information which is positional information of said featured frame; and

an index information storing unit (601) connected to said index information generating unit (401) and storing said index information.

7. (withdrawn) The image retrieval information storing apparatus according to claim 6, wherein

said coding information includes prediction mode information

and motion vector information; and

said frame feature value generating unit (102) includes

a prediction mode counting unit (201) connected to said coding information reading unit (101), receiving said prediction mode information and counting number of blocks coded in accordance with respective coding methods for each frame,

a frequency information converting unit (202) connected to said prediction mode counting unit (201) and outputting a prediction mode frame feature value which is a numerical representation of frame feature based on the number of blocks for each prediction method,

a motion vector statistic calculating unit (204) connected to said coding information reading unit (101) and calculating statistics of said motion vector based on said prediction mode information, and

a statistic information converting unit (205) connected to said prediction mode counting unit (201) and said motion vector statistic calculating unit (204), and outputting a motion vector frame feature value which is a numerical representation of frame feature based on outputs of said prediction mode counting unit (201) and said motion vector statistic calculating unit (204).

8. (withdrawn) An image retrieval information storing apparatus, comprising:

a coding information reading unit (101) reading prescribed coding information which will be information representing frame feature from coded image data;

a frame feature value generating unit (102) connected to said coding information reading unit (101) and generating a frame feature value which is a numerical representation of frame feature based on said coding information;

a first storing unit (1201, 103, 801) connected to said coding information reading unit (101) and to said frame feature value generating unit (102), and storing said coding information and said frame feature value in correspondence with each frame of said image data.

9. (withdrawn) The image retrieval information storing apparatus according to claim 8, further comprising:

an index information generating unit (401) connected to said frame feature value generating unit (102), determining a featured frame among said image data based on frame feature value and generating index information which is positional information of said featured frame;

wherein

said first storing unit (1201, 103, 801) includes a second storing unit (1201, 601, 103, 801) connected to said coding information reading unit (101), said frame feature value generating

unit (102) and said index information generating unit (401), and storing said coding information and said frame feature value in correspondence with each frame of said image data and said index information.

10. (withdrawn) The image retrieval information storing apparatus according to claim 9, wherein

said second storing unit (1201, 601, 103, 801) includes

a storing information selecting unit (1201) connected to said coding information reading unit (101), said frame feature value generating unit (102) and said index information generating unit (401), and selecting and outputting any of said coding information, said frame feature value and said index information,

an index information storing unit (601) connected to said storing information selecting unit (1201) and storing said index information,

a frame feature value storing unit (103) connected to said storing information selecting unit (1201) and storing said frame feature value in correspondence with each frame of said image data, and

a coding information storing unit (801) connected to said storing information selecting unit (1201) and storing said coding information in correspondence with each frame of said image data.

11. (withdrawn) The image retrieval information storing apparatus according to claim 8, wherein

said first storing unit(1201, 103, 801) includes

a storing information selecting unit(1201) connected to said coding information reading unit(101) and said frame feature value generating unit(102), and selecting and outputting any of said coding information and said frame feature value,

a frame feature value storing unit(103) connected said storing information selecting unit(1201) and storing said frame feature value in correspondence with each frame of said image data, and

a coding information storing unit(801) connected said storing information selecting unit(1201) and storing said coding information in correspondence with each frame of said image data.

12. (withdrawn) The image retrieval information storing apparatus according to claim 10, wherein

said coding information includes prediction mode information and motion vector information; and

said frame feature value generating unit (102) includes

a prediction mode counting unit (201) connected to said coding information reading unit (101), receiving said prediction mode information and counting number of blocks coded in accordance with respective prediction methods for each frame,

a frequency information converting unit (202) connected to

said prediction mode counting unit (201) and outputting a prediction mode frame feature value which is a numerical representation of frame feature based on the number of the blocks for each prediction method,

a motion vector statistic calculating unit (204) connected to said coding information reading unit (101), and calculating statistics of said motion vector based on prediction mode information, and

a statistic information converting unit (205) connected to said prediction mode counting unit (201) and said motion vector statistic calculating unit (204), and outputting a motion vector frame feature value which is a numerical representation of frame feature, based on outputs of said prediction mode counting unit (201) and said motion vector statistic calculating unit (204).

13. (withdrawn) The image retrieval information storing apparatus according to frame 9, wherein

said coding information includes prediction mode information and motion vector information; and

said frame feature value generating unit (102) includes

a prediction mode counting unit (201) connected to said coding information reading unit (101), receiving said prediction mode information and counting number of blocks coded in accordance with respective prediction methods for each frame,

a frequency information converting unit (202) connected to said prediction mode counting unit (201) and outputting a prediction mode frame feature value which is a numerical representation of frame feature based on the number of the blocks for each prediction method,

a motion vector statistic calculating unit (204) connected to said coding information reading unit (101), and calculating statistics of said motion vector based on prediction mode information, and

a statistic information converting unit (205) connected to said prediction mode counting unit (201) and said motion vector statistic calculating unit (204), and outputting a motion vector frame feature value which is a numerical representation of frame feature, based on outputs of said prediction mode counting unit (201) and said motion vector statistic calculating unit (204).

14. (withdrawn) The image retrieval information storing apparatus according to claim 8, wherein

said coding information includes prediction mode information and motion vector information; and

said frame feature value generating unit (102) includes

a prediction mode counting unit (201) connected to said coding information reading unit (101), receiving said prediction mode information and counting number of blocks coded in accordance with



respective prediction methods for each frame,

a frequency information converting unit (202) connected to said prediction mode counting unit (201) and outputting a prediction mode frame feature value which is a numerical representation of frame feature based on the number of the blocks for each prediction method,

a motion vector statistic calculating unit (204) connected to said coding information reading unit (101), and calculating statistics of said motion vector based on prediction mode information, and

a statistic information converting unit (205) connected to said prediction mode counting unit (201) and said motion vector statistic calculating unit (204), and outputting a motion vector frame feature value which is a numerical representation of frame feature, based on outputs of said prediction mode counting unit (201) and said motion vector statistic calculating unit (204).

15. (currently amended) An image retrieving apparatus, comprising:

an index information generating unit for receiving a frame feature value which is numerical information representing quantity of a feature contained in a frame of image data, for determining a featured frame among said image data based on said frame feature value in accordance with a request for extracting a featured frame,

and for generating index information which is positional information of said featured frame,

~~wherein a calculating unit for calculating said frame feature value is calculated by analyzing said image data including associated data for transporting, storing or coding the image, and the frame feature value is not being an original form in said image data; and~~

an image retrieval executing unit connected to said index information generating unit, for transmitting said request for extracting said featured frame to said index information generating unit, for receiving said index information from said index information generating unit, for receiving said image data from an external source, and for outputting a frame specified based on said index information, and

~~wherein an index information changing unit for adaptively changing said index information is adaptively changed by changing a setting of a threshold value during the process of image retrieval.~~

16. (previously presented) The image retrieving apparatus according to claim 15, wherein said image retrieval executing unit is connected to said index information generating unit, transmitting said request for extracting a featured frame to said index information generating unit, receiving said index information from said index information generating unit, and also receiving said

image data and index information from an external source, and outputting a frame specified based on said index information received from said index information generating unit or said index information from said external source.

17. (previously presented) The image retrieving apparatus according to claim 16, wherein

said index information generating unit includes  
a frame determining unit receiving said frame feature value and said request for extracting a featured frame, comparing said frame feature value and the threshold value in accordance with said request for extracting a featured frame, and determining said featured frame, and

an index generating unit connected to said frame determining unit and generating index information which is positional information of said featured frame.

18. (previously presented) The image retrieving apparatus according to claim 15, wherein said index information generating unit includes

a frame determining unit receiving said frame feature value and said request for extracting a featured frame, comparing said frame feature value and the threshold value in accordance with said request for extracting a featured frame, and determining said

featured frame, and

an index generating unit connected to said frame determining unit and generating index information which is positional information of said featured frame.

19. (withdrawn) An image retrieving apparatus, comprising:

a frame feature value generating unit (901) receiving prescribed coding information included in coded image data which will be information representing frame feature, and generating a frame feature value which is a numerical representation of the frame feature based on said coding information;

an index information generating unit (401) connected to said frame feature value generating unit (901), receiving said frame feature value from said frame feature value generating unit (901), determining a featured frame among said image data based on said frame feature value in accordance with a request for extracting a featured frame, and generating index information which is positional information of said featured frame, and

a first image retrieval executing unit (902) connected to said frame feature value generating unit (901) and said index information generating unit (401), transmitting said request for extracting a frame feature value to said frame feature value generating unit (901), transmitting said request for extracting a featured frame to said index information generating unit (401),

receiving said index information from said index information generating unit (401) and outputting a frame specified based on said index information.

20. (withdrawn) The image retrieving apparatus according to claim 19, wherein

said first image retrieval executing unit (902) includes a second image retrieval executing unit (902) connected to said frame feature value generating unit (901) and said index information generating unit (401), transmitting said request for extracting a frame feature value to said frame feature value generating unit (102), transmitting said request for extracting a featured frame to said index information generating unit (401), receiving said index information from said index information generating unit (401) and from outside, receiving said image data from outside, and outputting a frame specified based on said index information.

21. (withdrawn) The image retrieving apparatus according to claim 20, wherein

said index information generating unit (401) includes

a frame determining unit (501, 503) receiving said frame feature value and said request for extracting a featured frame, comparing said frame feature value and a threshold value in accordance with said request for extracting a featured frame, and

determining said featured frame, and

an index generating unit (502, 504) connected to said frame determining unit and generating index information which is positional information of said featured frame.

22. (withdrawn) The image retrieving apparatus according to claim 19, wherein

said index information generating unit (401) includes

a frame determining unit (501, 503) receiving said frame feature value and said request for extracting a featured frame, comparing said frame feature value and a threshold value in accordance with said request for extracting a featured frame, and determining said featured frame, and

an index generating unit (502, 504) connected to said frame determining unit and generating index information which is positional information of said featured frame.

23. (withdrawn) An image retrieving apparatus, comprising:

a frame feature value generating unit (901) receiving prescribed coding information included in coded image data, which will be information representing frame feature, and generating a frame feature value which is a numerical representation of the frame feature based on said coding information, in accordance with a request for extracting a frame feature value;

an index information generating unit (401) connected to said frame feature value generating unit (901), receiving said frame feature value from said frame feature value generating unit (901) and from outside, determining a featured frame among said image data based on said frame feature value in accordance with a request for extracting a featured frame, and generating index information which is positional information of said featured frame; and

a first image retrieval executing unit (902) connected to said frame feature value generating unit (901) and said index information generating unit (401), transmitting said request for extracting a frame feature value to said frame feature value generating unit (901), transmitting said request for extracting a featured frame to said index information generating unit (401) , receiving said index information from said information generating unit (401), receiving said image data from outside, and outputting a frame specified by said index information.

24. (withdrawn) The image retrieving apparatus according to claim 23, wherein

said first image retrieval executing unit (902) includes a second image retrieval executing unit (902) connected to said frame feature value generating unit (901) and said index information generating unit (401), transmitting said request for extracting a frame feature value to said frame feature value generating unit

(901), transmitting said request for extracting a featured frame to said index information generating unit (401), receiving said index information from said index information generating unit (401) and from outside, receiving said image data from outside, and outputting a frame specified based on said index information.

25. (withdrawn) The image retrieving apparatus according to claim 24, wherein

said index information generating unit (401) includes  
a frame determining unit (501, 503) receiving said frame feature value and said request for extracting a featured frame, comparing said frame feature value and a threshold value in accordance with said request for extracting a featured frame, and determining said featured frame, and

an index generating unit (502, 504) connected to said frame determining unit and generating index information which is positional information of said featured frame.

26. (withdrawn) The image retrieving apparatus according to claim 23, wherein

said index information generating unit (401) includes  
a frame determining unit (501, 503) receiving said frame feature value and said request for extracting a featured frame, comparing said frame feature value and a threshold value in



accordance with said request for extracting a featured frame, and determining said featured frame, and

an index generating unit (502, 504) connected to said frame determining unit and generating index information which is positional information of said featured frame.

27. (previously presented): The image retrieval information storing apparatus according to claim 1, further comprising:

a coding information reading unit for reading motion vector information from said image data which is coded; and

said frame feature value generating unit generates said frame feature value based on said motion vector information.

Claims 28-36 (canceled).

37. (New) A method of associating frame feature values with a plurality of frames of image data, comprising the steps of:

calculating statistics of motion vector information related to said image data; and

generating a frame feature value comprising numerical information representing a quantity of a feature contained in a frame of said image data using the calculated statistics.

38. (New) An information storing apparatus storing frame

feature values in association with a plurality of frames of encoded image data comprising:

a first frame feature value generating unit generating a first frame feature value for a given one of said plurality of frames based on prediction mode information from the plurality of frames;

a second frame feature value generating unit generating a second frame feature value for the given one of said plurality of frames based on motion vector statistics from the plurality of frames; and

a frame feature value storing unit operably connected to said first and second frame feature value generating units storing said first frame feature value and said second frame feature value in association with said given one of the plurality of frames.